

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SG2006/000254

A. CLASSIFICATION OF SUBJECT MATTER		
Int. Cl.		
H01L 33/00 (2006.01) H01L 21/00 (2006.01) H01L 27/15 (2006.01)		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
DWPI and keywords: light, generation, emission, many, plurality, epitaxial, active, quantum well, n-type, p-type, reflection, transmission, seed, buffer, diffusion, thermal expansion, gallium nitride, GaN, LED and other similar terms.		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6492661 B1 (CHIEN ET AL) 10 December 2002 See col 5 line 37 - col 8 line 28	32
A	US 2002/0022286 A1 (NIKOLAEV ET AL) 21 February 2002 See entire document	
A	US 2003/0151357 A1 (UEMURA) 14 August 2003 See entire document	
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex		
<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"Z" document member of the same patent family</p>		
Date of the actual completion of the international search 03 November 2006		Date of mailing of the international search report 16 NOV 2006
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929		Authorized officer  Lynn Bloomfield Telephone No : (02) 6283 2851

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**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

Claim 32 lacks unity. The only feature this claim has in common with the other independent claims is the plurality of epitaxial layers. However, this common feature is generic in the art. Consequently the common feature does not constitute a "special technical feature" since it makes no contribution over the prior art. Since there exists no other common feature which can be considered as a special technical feature, no technical relationship between the different inventions can be seen. Consequently the claims do not satisfy the requirement that they relate to one invention only.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2005/0026399 A1 (CHIEN ET AL) 3 February 2005 See entire document	
A	US 2003/0038284 A1 (KURAHASHI ET AL) 27 February 2003 See entire document	

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited In Search Report		Patent Family Member			
US	6492661	NONE			
US	2002022286	US	6218269	US	6472300
		US	6479839	US	6555452
		US	6559467	US	6599133
		US	6890809	US	2002017650
		US	2002028565	US	2002030192
		US	2002047127	US	2002047135
		US	2003049898	US	2004026704
US	2003151357	JP	2003243700	US	7042153
US	2005026399	US	6967346		
US	2003038284	JP	2002083999	US	6548824
		US	2002011600	US	6924502
Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.					
END OF ANNEX					